

CLAIMS

I claim:

1. A method for recording content distribution information in an adjunct to content, comprising: providing copier related information for a succession of copies of content in the adjunct to the content.

2. The method according to claim 1, wherein said succession of copies are generated by a chain of copiers, and said providing copier related information comprises providing identifying information for said chain of copiers such that said identifying information is interconnected through successive modifications of the adjunct to the content.

3. The method according to claim 2, wherein a size of the adjunct to the content is substantially unchanged through said successive modifications of the adjunct to the content.

4. The method according to claim 2, wherein a complexity of individual of said successive modifications is approximately of a same level as others of said successive modifications of the adjunct to the content.

5. The method according to claim 2, wherein identifying information provided in prior of said

successive modifications are preserved in subsequent of said successive modifications so as to be extractable from the adjunct to the content.

6. The method according to claim 1, wherein said providing copier related information comprises: modifying the adjunct by adding individual copier related information for a copier of the content when the copier is proceeding to generate a copy of the content.

7. The method according to claim 6, wherein said modifying the adjunct comprises: generating a modified adjunct by performing a functional transformation using information of the adjunct prior to said modifying along with said individual copier related information.

8. The method according to claim 7, wherein said modified adjunct is provided with said copy of the content.

9. The method according to claim 7, wherein said functional transformation is characterized by an inverse transformation from which said individual copier related information is retrievable from said modified adjunct.

10. The method according to claim 9, wherein said functional transformation is an exclusive-OR function.

11. The method according to claim 7, wherein said adjunct is a watermark embedded in the content.

12. The method according to claim 7, wherein said adjunct is meta data in a DRM wrapper.

13. The method according to claim 7, wherein said adjunct is a signature related to the content.

14. The method according to claim 13, wherein said signature is a message digest calculated using the content.

15. The method according to claim 13, wherein said signature is a hash value calculated using the content.

16. The method according to claim 1, wherein said content is copyrightable material.

17. The method according to claim 1, wherein said individual copier related information includes information of a user identification associated with a user of the copier proceeding to generate the copy of the contents.

18. The method according to claim 1, wherein said individual copier related information includes information of an IP address associated with the copier proceeding to generate the copy of the content.

19. The method according to claim 1, wherein said individual copier related information includes information of a copy device used in generating a copy of the content by the copier proceeding to generate the copy of the content.

20. The method according to claim 19, wherein the copier proceeding to generate the copy of the content is a personal computer, and the copy device is a digital writer.

21. The method according to claim 20, wherein said digital writer is a CD writer.

22. The method according to claim 20, wherein said digital writer is a DVD writer.

23. The method according to claim 20, wherein the copier proceeding to generate the copy of the content is a consumer electronic device.

24. The method according to claim 23, wherein said consumer electronic device is a set-top box.

25. The method according to claim 21, wherein said consumer electronic device is a DVD player.

26. A method for recording content distribution, information into an adjunct to content, comprising: adding copier related information into an adjunct to content upon each generation of an authorized copy of the content.

27. The method according to claim 26, wherein said adding copier related information into an adjunct to content, comprises:

generating a modified adjunct by performing a functional transformation using information of the adjunct prior to generation of an authorized copy of the content along with copier related information associated with such generation; and

including the modified adjunct along with the content in the authorized copy.

28. The method according to claim 27, wherein said functional transformation is characterized by an inverse transformation from which said copier related information is retrievable from the modified adjunct.

29. The method according to claim 27, wherein said modified adjunct is characterized by a size, and said functional transformation does not increase said size when

performed on said modified adjunct to generate a subsequently modified adjunct.

30. The method according to claim 29, wherein said functional transformation is further characterized by a complexity that is substantially the same when performed on said modified adjunct to generate said subsequently modified adjunct.

31. The method according to claim 26, wherein said adjunct is a watermark embedded in the content.

32. The method according to claim 26, wherein said adjunct is meta data associated with the content.

33. The method according to claim 32, wherein said meta data is included with the content.

34. The method according to claim 32, wherein said meta data is not included with the content.

35. The method according to claim 26, wherein said adjunct is a signature related to the content.

36. The method according to claim 26, wherein the content is copyrightable material.

37. The method according to claim 26, wherein said copier related information includes information of a user identification associated with a user of a copier used for generation of an authorized copy of the content.

38. The method according to claim 26, wherein said copier related information includes information of an IP address associated with a copier used for generation of an authorized copy of the content.

39. The method according to claim 26, wherein said copier related information includes information of a copy device used for generation of an authorized copy of the content.

40. The method according to claim 26, further comprising: using copy control information provided with said content to determine whether an authorized copy of content may be generated.

41. The method according to claim 40, wherein said copy control information is provided in said adjunct.

42. The method according to claim 26, further comprising: receiving permission from a remote server before each generation of an authorized copy of the content.

43. A method for recording content distribution information in an adjunct to content, comprising:
performing a functional transformation on an adjunct to content each time an authorized copy of the content is generated so that said adjunct is modified to include copier related information for the generation of the authorized copy.

44. The method according to claim 43, wherein said functional transformation is characterized by an inverse transformation from which said copier related information is retrievable from the modified adjunct.

45. The method according to claim 44, wherein said functional transformation is an exclusive-OR function.

46. The method according to claim 43, wherein said adjunct is a watermark embedded in the content.

47. The method according to claim 43, wherein said adjunct is meta data associated with the content.

48. The method according to claim 43, wherein said adjunct is a signature related to the content.

49. The method according to claim 43, wherein the content is copyrightable material.

50. The method according to claim 43, wherein said copier related information includes information of a user identification associated with a user of a copier used for generation of an authorized copy of the content.

51. The method according to claim 43, wherein said copier related information includes information of an IP address associated with a copier used for generation of an authorized copy of the content.

52. The method according to claim 43, wherein said copier related information includes information of a copy device used for generation of an authorized copy of the content.

53. A method for recording content distribution information in an adjunct to content, comprising:
performing a functional transformation on an adjunct to content in a packet of data when said packet of data is relayed by a network node so that said adjunct is modified to include identifying information of said network node.

54. The method according to claim 53, wherein said adjunct is further modified to include information indicating an approximate time when said functional transformation is being performed.

55. The method according to claim 53, wherein said functional transformation is characterized by an

inverse transformation from which said identifying information of said network node is retrievable from the modified adjunct.

56. The method according to claim 53, wherein each network node relaying said packet of data through a network to a final destination performs said functional transformation on the adjunct to content in said packet of data so that said adjunct is modified to include identifying information of all such network nodes by the time it reaches said final destination.

57. The method according to claim 53, wherein said adjunct is a watermark embedded in the content.

58. The method according to claim 53, wherein said adjunct is meta data associated with the content.

59. The method according to claim 53, wherein said adjunct is a signature related to the content.

60. A method for extracting content distribution information from a copy of content, comprising:
sequentially performing an inverse transformation on and extracting content distribution information from an adjunct to a copy of content until information of an original copy of the content is detected.

61. The method according to claim 60, wherein said content distribution information includes copier related information.

62. The method according to claim 61, wherein said inverse transformation corresponds to a functional transformation used to modify said adjunct with copier related information upon each successive generation of an authorized copy of the content originating from said original copy of the content.

63. The method according to claim 62, wherein said inverse transformation is an exclusive-OR function.

64. The method according to claim 63, wherein said functional transformation is an exclusive-OR function.

65. The method according to claim 60, wherein said adjunct is a watermark embedded in the content.

66. The method according to claim 60, wherein said adjunct is meta data associated with the content.

67. The method according to claim 60, wherein said adjunct is a signature related to the content.

68. The method according to claim 60, wherein said content is copyrightable material.

69. The method according to claim 61, wherein said copier related information includes information of a user identification associated with a user of a copier.

70. The method according to claim 61, wherein said copier related information includes information of an IP address associated a copier.

71. The method according to claim 61, wherein said copier related information includes information of a copy device used in generating a copy of the content by a copier.

72. A method for extracting content distribution information from a packet of data, comprising: sequentially performing an inverse transformation on and extracting content distribution information from an adjunct to content in the packet of data until information of a source of the packet of data is detected.

73. The method according to claim 72, wherein said inverse transformation corresponds to a functional transformation used to modify said adjunct with network node identifying information upon each relay of said packet of data from said source to a final destination.

74. The method according to claim 73, wherein said inverse transformation is an exclusive-OR function.

75. The method according to claim 74, wherein said functional transformation is an exclusive-OR function.

76. The method according to claim 72, wherein said adjunct is a watermark embedded in the content.

77. The method according to claim 72, wherein said adjunct is meta data associated with the content.

78. The method according to claim 72, wherein said adjunct is a signature related to the content.

79. The method according to claim 72, wherein said content distribution information includes information of an approximate time for each relay of said packet of data from an initial time that said packet left a source node to a current time associated with said extracting of content distribution information from said adjunct to content in the packet of data.

80. The method according to claim 79, wherein said approximate time includes information of a time zone associated with said approximate time.

81. The method according to claim 72, wherein an adjunct to content in a packet of data received at said final destination includes network node identifying information for all network nodes in a network through which said packet of data was relayed between said source to said final destination.

82. The method according to claim 81, wherein said network node identifying information for each network node includes an IP address for the network node.

83. The method according to claim 72, wherein said method is performed by a BOT on the network.

84. The method according to claim 83, wherein said method is performed by said BOT on each packet of data encountered by said BOT while scouring the network so that the content distribution information determined thereby is useful for determining a network topology for said network.

85. The method according to claim 84, wherein said content distribution information determined by said BOT scouring the network is also useful for determining supernodes in said network.

86. An apparatus for providing content distribution information in an adjunct to content,

comprises a copier configured to: modify an adjunct to content by adding information associated with the copier to the adjunct when the copier is proceeding to have a copy generated which includes the modified adjunct and the content.

87. The apparatus according to claim 86, wherein said copier is a computer.

88. The apparatus according to claim 86, wherein said copier is a consumer electronic device.

89. The apparatus according to claim 86, wherein said copier is a set-top box.

90. The apparatus according to claim 86, wherein the copier is further configured to modify the adjunct by performing a functional transformation using information of the adjunct prior to such modification and the information associated with the copier.

91. The apparatus according to claim 90, wherein said functional transformation is characterized by an inverse transformation from which said information associated with said copier is retrievable from the modified adjunct.

92. The apparatus according to claim 86, wherein said adjunct is a watermark embedded in the content.

93. The apparatus according to claim 86, wherein said adjunct is meta data associated with the content.

94. The apparatus according to claim 86, wherein said adjunct is a signature related to the content.

95. The apparatus according to claim 86, wherein said content is copyrightable material.

96. The apparatus according to claim 86, wherein said information associated with said copier includes information of a user identification associated with a user of said copier.

97. The apparatus according to claim 86, wherein said information associated with said copier includes information of an IP address associated with said copier.

98. The apparatus according to claim 86, wherein said information associated with said copier includes information of a copy device used in generating said copy by said copier.

99. The apparatus according to claim 86, wherein said copier is further configured to cause said copy to be generated on a tangible medium.

100. The apparatus according to claim 86, wherein said copier is further configured to cause said copy to be generated as a downloadable file.

101. An apparatus for extracting content distribution information from a copy of content, comprising a device configured to sequentially perform an inverse transformation on and extract content distribution information from an adjunct to content until information of an original copy of the content is detected.

102. The apparatus according to claim 101, wherein said content distribution information includes copier related information.

103. The apparatus according to claim 102, wherein said inverse transformation corresponds to a functional transformation used to modify said adjunct with copier related information upon successive generations of authorized copies of the content originating from said original copy of the content.

104. The apparatus according to claim 101, wherein said inverse transformation is an exclusive-OR function.

104. The apparatus according to claim 101, wherein said adjunct is a watermark embedded in the content.

105. The apparatus according to claim 101, wherein said adjunct is meta data associated with the content.

106. The apparatus according to claim 101, wherein said adjunct is a signature related to the content.

107. The apparatus according to claim 101, wherein the content is copyrightable material.

108. The apparatus according to claim 102, wherein said copier related information includes information of a user identification associated with a user of a copier used to generate one of said authorized copies.

109. The apparatus according to claim 102, wherein said copier related information includes information of an IP address associated with a copier used to generate one of said authorized copies.

110. The apparatus according to claim 109, wherein said one of said authorized copies is a downloadable file.

111. The apparatus according to claim 101,
wherein said copier related information includes
information of a copy device used in generating one of said
authorized copies.